CLAIMS

1. A legged mobile robot equipped with legs each having a hip joint that connects a body with a thigh link, a knee joint that connects the thigh link with a shank link, and an ankle joint that connects the shank link with a foot to move by driving each leg,

characterized in that:

each of the hip joint comprises a first rotary shaft that provides a degree of freedom to rotate about a yaw axis, a second rotary shaft that provides a degree of freedom to rotate about a roll axis, and a third rotary shaft that provides a degree of freedom to rotate about a pitch axis, and in addition thereto, a fourth rotary shaft that provides a redundant degree of freedom.

2. The robot according to claim 1, wherein each of the hip joint is further equipped with a first member that is connected to the body through one of the first to third rotary shafts, and a second member that is connected to the thigh link through others of the first to third rotary shafts, and the first member and the second member are connected through the fourth rotary shaft.

3. The robot according to claim 1, wherein the fourth rotary shaft is a shaft that is not parallel to the yaw axis.

4. The robot according to claim 1, wherein the fourth rotary shaft is situated forward of the first rotary shaft in a direction of the roll axis.

5. The robot according to claim 1, further including:

a first rotary shaft motor that drives the first rotary shaft and a first rotary shaft speed reducer that reduces an output of the first rotary shaft motor in speed, and output shafts of the first rotary shaft motor and the first rotary shaft speed reducer are situated to be coaxial with the first rotary shaft.

6. The robot according to claim 1, further including:

a second rotary shaft motor that drives the second rotary shaft and a second rotary shaft speed reducer that reduces an output of the second rotary shaft motor in speed, and output shafts of the second rotary shaft motor and the second rotary shaft speed reducer are situated to be coaxial with the second rotary shaft.

7. The robot according to claim 1, further including:

a third rotary shaft motor that drives the third rotary shaft and a third rotary shaft speed reducer that reduces an output of the third rotary shaft motor in speed, and an output shafts of the third rotary shaft speed reducer is situated to be coaxial with the third rotary shaft.

8. The robot according to claim 1, further including:

a fourth rotary shaft motor that drives the fourth rotary shaft, and the fourth rotary shaft motor is situated at a same position as the fourth rotary shaft or at a position closer to the body than the fourth rotary shaft.

9. The robot according to claim 8, further including:

a fourth rotary shaft speed reducer that reduces an output of the fourth rotary shaft motor in speed, and an output shaft of the fourth rotary shaft speed reducer is situated to be coaxial with the fourth rotary shaft.

10. The robot according to claim 2, further including:

a second rotary shaft motor that drives the second rotary shaft and a fourth rotary shaft motor that drives the fourth rotary shaft, and the second member is connected with the thigh link through at least the second rotary shaft such that the fourth rotary shaft motor is situated toward a side of the body from the second rotary shaft motor.

11. The robot according to claim 2, further including:

a third rotary shaft motor that drives the third rotary shaft and a fourth rotary shaft motor that drives the fourth rotary shaft, and the second member is connected with the thigh link through at least the third rotary shaft such that the fourth rotary shaft motor is situated toward a side of the body from the third rotary shaft motor.

12. The robot according to claim 1, wherein the fourth rotary shaft motor is situated on a side opposite from the fourth rotary shaft in the direction of the roll axis, sandwiching a center axis of the leg therebetween.

13. The robot according to claim 1, wherein the first rotary shaft is offset relative to the center axis of the leg in the direction of the roll axis.

14. The robot according to claim 1, wherein the second rotary shaft and the third rotary shaft intersect at right angles.